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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,469	07/29/2003	Krishna Darbha	END920010115US2	7302

7590 04/04/2005

Schmeiser, Olsen & Watts
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Latham, NY 12110

EXAMINER

NGUYEN, DILINH P

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/629,469		DARBHA ET AL.	
	Examiner		Art Unit	
	DiLinh Nguyen		2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-11, 13, 21, 23, 25, 26, 28 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11, 13, 21, 23, 25-26, 28, 30-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/17/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 11, 13, 21, 23, 25-26, 28 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagarajan et al. (U.S. Pat. 6639321) (previously applied) in view of Kinsman et al. (U.S. Pat. 6717245) (newly cited) and further in view of Akram et al. (U.S. Pat. 6155247) (newly cited).

- Regarding claims 9 and 25, Nagarajan et al. disclose a semiconductor device comprising:

a substrate 108; a semiconductor die electrically coupled to the substrate; and wherein the substrate comprises a coefficient of thermal expansion that is greater than a coefficient of thermal expansion of the semiconductor die 202 (cover fig., column 5, lines 19-23).

Nagarajan et al. fail to disclose a plurality of segments electrically coupled to the substrate and at least one segment of the plurality of segment is not congruent with respect to a remaining segment of the plurality of segments.

However, Kinsman et al. disclose a semiconductor device comprising:

a substrate 50, wherein the substrate is selected from the group consisting of a printed circuit board (fig. 4, column 9, lines 24-25);

a semiconductor device 10 is electrically coupled to the substrate, wherein the semiconductor device is divided into a plurality of segments 34 (fig. 4) to form a multi-chip module resulting in a smaller package with increased performance for the semiconductor package (column 9, lines 51-52).

Akram et al. disclose a semiconductor device comprising: a semiconductor device is divided into a plurality of segments, wherein at least one segment 204 of the plurality of segments is not congruent with respect to a remaining segment of the plurality of segments (figs. 5 and 9, abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Nagarajan et al. by having a plurality of segments electrically coupled to the substrate, as taught by Kinsman et al., and at least one segment is not congruent, as taught by Akram et al., in order to form a multi-chip module resulting in a smaller package with increased performance for the semiconductor package (Kinsman et al., column 9, lines 51-52) and use the semiconductor device in a particular application (Akram et al., fig. 5).

- Regarding claims 11 and 28, Akram et al. disclose that wherein a first segment and a second segment 51 of the plurality of segments are congruent with respect to each other (cover fig.).
- Regarding claims 13 and 31, Akram et al. disclose that the plurality of segments are square segments 64 (cover fig.).

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- Regarding claim 21, Kinsman et al. disclose that the substrate 50 is symmetrically coupled to each segment 34 of the semiconductor device 10 (fig. 4).
- Regarding claims 23 and 32, Kinsman et al. disclose that the semiconductor device 10 is a semiconductor chip (fig. 4).
- Regarding claim 26, Kinsman et al. disclose that each segment 34 of the semiconductor device 10 is symmetrically coupled to the substrate 50 (fig. 4).

3. Claims 10 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagarajan et al. (U.S. Pat. 6639321) (previously applied) and Kinsman et al. (U.S. Pat. 6717245) (newly cited) in view of Akram et al. (U.S. Pat. 6155247) (newly cited) and further in view of Lin (U.S. Pat. 6451626) (newly cited).

Nagarajan et al., Kinsman et al. and Akram et al. do not explicitly disclose the length of each segment of the semiconductor device is greater than or equal to 5 millimeters.

However, Lin discloses a semiconductor device comprising a chip 110 has a length and width of 10 millimeters (column 7, lines 7-8 and 13-14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made substitute the segment of the above combination by having a length of each segment of the semiconductor device is greater than 5 millimeters, as taught by Lin, for improving reliability and design flexibility in mounting semiconductor device (column 5, lines 30-40).

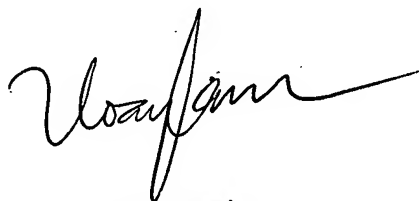
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN



HOAI PHAM
PRIMARY EXAMINER